**TEKS 8.5 A Atoms-Key Concepts and Fundamental Questions**

**Student Expectation**

The student is expected to describe the structure of atoms, including the masses, electrical charges, and locations, of protons and neutrons in the nucleus and electrons in the electron cloud.

**Key Concepts**

* An atom is the smallest unit of an element that maintains all of the chemical and physical properties of that element. Atoms are made up of subatomic particles called protons, neutrons, and electrons.
* Protons and neutrons are located in the nucleus of an atom. These tiny subatomic protons and neutrons have nearly identical masses and their combined mass determines the mass of the atom.
* Electrons are located outside of the nucleus of an atom in an area called the electron cloud. Since the electron cloud takes up space, electrons contribute to the volume of an atom. Electrons are so small that their presence does not significantly change the mass of the atom.
* Protons have a positive electrical charge and electrons have a negative electrical charge. Neutrons have a no electrical charge. When an atom has the same number of protons and electrons the electrical charges cancel out so the atom, as a whole, does not have an electrical charge.

**Fundamental Questions**

* What is an atom?
* What are the subatomic particles that compose an atom?
* How are protons and neutrons similar?
* What determines the mass of an atom?
* How do electrons differ from protons and neutrons?
* What are the charges of electrons, protons and neutrons?
* How do the number of protons and electrons in an atom affect its electrical charge?